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| 46334 | 7590 | 01/09/2006 | EXAMINER | |
| HAYNES AND BOONE, LLP | | | TAMAI, KARL I | |
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| SUITE 3100 | | | PAPER NUMBER | |
| DALLAS, TX 75202 | | | 2834 | |

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/698,116

Applicant(s)

FLEURY ET AL.

Examiner

Tamai I.E. Karl

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PM

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The objection to the oath is withdrawn.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the substantially rectangle shaped conductive element and the winding electrically connected to a power supply and only one end of the winding must be shown or the features canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The amended title, "Small Hand Held Medical Drill", is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The examiner suggests "Small High Speed Medical Drill with Self Supporting Stator Windings".

4. The disclosure is objected to because of the following informalities: the power cord/battery is shown in figure 2, not figure 1, as set forth in paragraph 0038, page 10 of the specification. Appropriate correction is required.

Claim Objections

5. The objection to Claims 2, 7, 8, 9, 23, and 24 are withdrawn.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 37-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The specification does not provide any description of the winding is electrically connected to an electrical supply only at one end of the winding. The specification discloses the power cord/battery is on one end (page 10, paragraph 0038), but does not disclose the which end of the winding is connected to the battery/power cord or that only one end is used to connect the windings to the electrical supply.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 22-24 and 27-30 are rejected under 35 U.S.C. 102(b) as anticipated by Dunlop et al. (Dunlop)(WO93/26705) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dunlop et al. (Dunlop) (WO93/26705) and Vaerenbergh (Ageing of Permanent Magnet Devices at the ESRF). Dunlop teaches a housing 19 supporting a laminated armature 13 with a self supporting winding 12 for the motor and a permanent

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magnet rotor 11 mounted on a shaft extending through the housing. Dunlop teaches the coils selectively connected to a power supply by controller 76. Dunlop teaches the rotor magnet being VACODYM 400 NdFeB (inherently has a remanence greater than or equal to 1T). Dunlop teaches the coils being a self supporting type A- three phase, two pole(semi coils) winding. Dunlop teaches the core having laminations of .02 mm thickness. Dunlop shows the housing 19 having a small dimension approximately the size of the air gap (0.5mm). Dunlop teaches the stator core is between 16-22mm. Dunlop clearly teaches the housing less than 20mm because Figure 2 can be used for what it reasonably teaches to a person of ordinary skill in the art. Dunlop does not literally teach VACODYM 400 having a remanence of greater than or about equal to 1T). Vaerenbergh teaches the range of 1.05-1.15 T. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop with the remanence greater than or equal to about 1.15 T to provide an optimize the flux and torque in the motor, and it is within the ordinary skill in the art to choose within range of the magnet, as shown by Vaerenbergh.

The examiner notes that the method of making limitation of the 1 T after remanence after autoclaved is a method of making limitation that is not germane to the patentability of the apparatus, therefore has not been given patentable weight.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. (Dunlop)(WO93/26705) and Ozawa et al. (Ozawa)(EP 1 073 179). Dunlop teaches every aspect of the invention except the self supporting coil being rhombic. Ozawa teaches a slotless dynamo electric machine having rhombic coil to provide high output and miniaturization. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop with the rhombic coils of Ozawa to provide high output and miniaturization.

12. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. (Dunlop)(WO93/26705) and Sawada et al. (Sawada)(US 6133667). Dunlop teaches every aspect of the invention except the conductive element having a rectangular shape. Sawada teaches a slotless dynamo electric machine having rectangular coils to reduce the height of the coils. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop with the coils of Sawada to provide a compact slotless motor, and because it is within the ordinary skill in the art to choose between known equivalents.

13. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. (Dunlop)(WO93/26705) and Perkins (US 6208056). Dunlop teaches every aspect of the invention except the thermoplastic element disposed about a conductive element.

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Perkins teaches a slotless dynamo electric machine having the coils supported by a thermoplastic resin. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop with the thermoplastic resin about the coils to provide a good strength insulator to support the coils in the core, as taught by Perkins.

14. Claims 28-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Dunlop et al. (Dunlop)(WO93/26705) and Wallner et al. (Wallner)(US 6107704). Dunlop teaches every aspect of the invention except the diameter of the housing being less than 30, 25, 20, 16, or in the range of 15-16 mm. Wallner teaches a small motor with a housing diameter of 15mm. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop with the housing being 15 mm because Wallner teaches that 15 mm is a preferred size for small motors to fit in small places.

15. Claims 33-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Dunlop et al. (Dunlop)(WO93/26705) and Lou et al. (Lou)(US 5990584). Dunlop teaches every aspect of the invention except length of the stator being less than 100, 60, 50, or in the range of 40-50 mm. Lou teaches a small motor with a length of 45 mm. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop with the stator core length of 45 mm because Lou teaches that permanent magnet motors are designed to be small with low voltage and good torque characteristics.

16. Claims 1, 3, 5-9, and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. (Dunlop)(WO93/26705) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dunlop et al. (Dunlop) (WO93/26705) and Vaerenbergh, in further view of Shirakawa (US 5140210). Dunlop teaches every aspect of the invention, as discussed above, except the protective brass layer between the stator and rotor. Shirakawa teaches a protective brass layer 44 to support the rotor for safe and high speed rotation. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop with the brass protective cover of Shirakawa to allow safe high speed rotation.

17. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. (Dunlop)(WO93/26705) and Shirakawa, and Vaerenbergh (Ageing of Permanent Magnet Devices at the ESRF). Dunlop and Shirakawa teach every aspect of the invention except the magnet having a remenance greater than or equal to about 1.15 T. Vaerenbergh teaches the range of 1.05-1.15 T. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop with the remenance greater than or equal to about 1.15 T to provide an optimize the flux and torque in the motor, and it is within the ordinary skill in the art to choose within range of the magnet, as shown by Vaerenbergh.

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18. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. (Dunlop)(WO93/26705) and Shirakawa, in further view of Ozawa et al. (Ozawa)(EP 1 073 179). Dunlop and Shirakawa teach every aspect of the invention except the self supporting coil being rhombic. Ozawa teaches a slotless dynamo electric machine having rhombic coil to provide high output and miniaturization. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop and Shirakawa with the rhombic coils of Ozawa to provide high output and miniaturization.

19. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. (Dunlop)(WO93/26705) and Shirawaka, in further view of Sawada et al. (Sawada)(US 6133667). Dunlop and Shirakawa teach every aspect of the invention except the conductive element having a rectangular shape. Sawaka teaches a slotless dynamo electric machine having rectangular coils to reduce the height of the coils. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop and Shirakawa, with the coils of Sawada to provide a compact slotless motor, and because it is within the ordinary skill in the art to choose between known equivalents.

20. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. (Dunlop)(WO93/26705) and Shirakawa, in further view of Perkins (US 6208056). Dunlop and Shirakawa teach every aspect of the invention except the thermoplastic

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element disposed about a conductive element. Perkins teaches a slotless dynamo electric machine having the coils supported by a thermoplastic resin. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop and Shirakawa with the thermoplastic resin about the coils to provide a good strength insulator to support the coils in the core, as taught by Perkins.

21. Claims 13-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Dunlop et al. (Dunlop)(WO93/26705) and Shirakawa, in further view of Wallner et al. (Wallner)(US 6107704). Dunlop and Shirakawa teach every aspect of the invention except the diameter of the housing being less than 30, 25, 20, 16, or in the range of 15-16 mm. Wallner teaches a small motor with a housing diameter of 15mm. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop and Shirakawa with the housing being 15 mm because Wallner teaches that 15 mm is a preferred size for small motors to fit in small places.

22. Claims 18-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Dunlop et al. (Dunlop)(WO93/26705) and Shirakawa, in further view of Lou et al. (Lou)(US 5990584). Dunlop teaches every aspect of the invention except length of the stator being less than 100, 60, 50, or in the range of 40-50 mm. Lou teaches a small motor with a length of 45 mm. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop and Shirakawa

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with the stator core length of 45 mm because Lou teaches that permanent magnet motors are designed to be small with low voltage and good torque characteristics.

23. Claims 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. (Dunlop)(WO93/26705) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dunlop et al. (Dunlop) (WO93/26705) and Vaerenbergh, in further view of Futterer (US 3694684). Dunlop teaches every aspect of the invention, as discussed above, except the winding connected to a power supply only at one end of the winding. Futterer shows the electrical connections for the rhombic winding exiting from the same end. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop with the electrical connections for the winding extending from only one side, as in Futterer, to provide a easy connection to the switch/power supply of Dunlop.

24. Claim 41 is rejected under 35 U.S.C. 102(b) as being anticipated by Dunlop et al. (Dunlop)(WO93/26705) and Futterer, in further view of Lou et al. (Lou)(US 5990584). Dunlop teaches every aspect of the invention except length of the stator being less than 100, 60, 50, or in the range of 40-50 mm. Lou teaches a small motor with a length of 45 mm. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Dunlop and Futterer, with the stator core length of 45 mm because Lou teaches that permanent magnet motors are designed to be small with low voltage and good torque characteristics.

Response to Arguments

25. Applicant's arguments filed 10/25/2005 have been fully considered but they are not persuasive. Applicant's argument regarding the "substantially rectangular wire" being shown in figure 5a and 5b is not persuasive because the "substantially rectangular" limitation is not shown. Applicant's argument regarding "self supporting" in claim 7, 22, and 37 is not persuasive. Dunlop teaches the winding 12 is prewound and inserted in the armature core (page 8, first paragraph), to be self supporting. Applicant's argument regarding the protective layer is not persuasive. Shirakawa teaches a protective sleeve 44 between the rotor (shaft and magnet as set forth in claim 1) and the stator (winding and laminated magnetic portion). The protective layer is clearly between the rotor and stator and protecting the magnets and stator from damage during motor operation, (see col. 2, line 20: "machine rotor which is safe and reliable even during high speed rotation"). Applicant's argument regarding the motivation to combine the references is not persuasive for the reasons set forth above and in the prior Office Action. The examiner notes that Mulgrave and Shramo both show the slotless windings having connections extending from only one side for connection to the control circuits.

Conclusion

26. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (571) 272 - 2036. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg, can be reached at (571) 272 - 2044. The facsimile number for the Group is (703) 872 - 9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karl I Tamai
PRIMARY PATENT EXAMINER
January 4, 2006



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